

**What is claimed is:**

1. Apparatus for conducting geophysical surveys, comprising:  
at least one multi-conductor cable having a plurality of take-out  
locations;  
5 a controller for transmitting a coded command signal having a first  
portion that is modifiable to identify a specific take-out location and a second  
portion for identifying a specific conductor of said cable to be connected to  
ground; and  
a plurality of interchangeable addressable switches for connection in  
10 series to said cable at selected ones of said take-out locations, each of said  
switches being operable to receive and modify the first portion of said  
command signal and to transmit the command signal so modified to an  
adjacent one of said switches, such that successive ones of said switches  
15 modify said first portion of the command signal until said first portion has  
been modified to identify said specific take-out location, whereupon a specific  
switch connected to the cable at said specific take-out location connects said  
specific conductor to ground in accordance with said second portion of the  
coded command signal.
- 20 2. The apparatus of claim 1, further including a generator for generating  
an electrical current on one conductor pair of said cable.
3. The apparatus of claim 1, further including a voltmeter for measuring  
voltage across one conductor pair of said cable.
- 25 4. The apparatus of claim 1, wherein said controller generates said first  
portion of the coded command signal as a numeric corresponding in number  
to said specific switch in said series along said cable measured from the  
location of said controller, and wherein the first portion of said command  
30 signal is modified to reduce said numeric by a predetermined amount at each  
successive one of said switches until the command signal is received by said  
specific switch, whereupon said specific switch connects said specific

conductor to ground in accordance with said second portion of the coded command signal.

5        5.        The apparatus of claim 4, wherein said predetermined amount is one.

6.        The apparatus of claim 1, further including gate circuitry for controlling the direction of transmission of said coded command signal along said cable, such that said controller may be selected for operation at either end of said cable.

10       7.        The apparatus of claim 6, wherein said gate circuitry includes a pair of unidirectional gates connected in parallel with opposite polarity between respective ones of said switches for transmitting said command signal therebetween, and control logic connected to a further conductor of said  
15       cable and to each respective one of said gates for enabling only one of said gates in each pair, such that said command signal is transmitted between said switches in only one direction along said cable.

20       8.        A method of conducting geophysical surveys along a multi-conductor cable having a plurality of take-out locations, comprising:

transmitting from a controller a coded command signal having a first portion that is modifiable to identify a specific take-out location and a second portion for identifying a specific conductor of said cable to be connected to ground;

25       connecting a plurality of interchangeable addressable switches in series to said cable at selected ones of said take-out locations; and

within respective ones of said switches receiving and modifying the first portion of said command signal and transmitting the command signal so modified to an adjacent one of said switches, such that successive ones of  
30       said switches modify said first portion of the command signal until said first portion has been modified to identify said specific take-out location, whereupon a specific switch connected to the cable at said specific take-out

location connects said specific conductor to ground in accordance with said second portion of the coded command signal.

5 9. The method of claim 8, further including generating an electrical current on one conductor pair of said cable.

10. The method of claim 8, further including measuring voltage across one conductor pair of said cable.

10 11. The method of claim 8, wherein said first portion of the coded command signal is a numeric corresponding in number to said specific switch in said series along said cable measured from the location of said controller, and wherein the first portion of said command signal is modified to reduce said numeric by a predetermined amount at each successive one of said  
15 switches until the command signal is received by said specific switch whereupon said specific switch connects said specific conductor to ground in accordance with said second portion of the coded command signal.

20 12. The method of claim 11, wherein said predetermined amount is one.

13. The method of claim 8, further including controlling the direction of transmission of said coded command signal along said cable, such that said controller may selected for operation at either end of said cable.